

A map of Orange County, California, showing land use and urban runoff. The map is color-coded: green for forested areas, yellow for agricultural or open land, and white for urban areas. Blue lines represent water bodies and streams. The map is overlaid on a grey background showing the county's outline and major roads.

# Orange County SCORE Program

## Phase One Report

A SUMMARY OF FINDINGS FROM THE SCORE LAND USE AND URBAN RUNOFF TASK FORCES

*Prepared by:*



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October 2002

***Orange County SCORE Program***

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## SCORE Land Use Task Force

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George Scarbrough	City of San Juan Capistrano
Chuck Wilson	City of Mission Viejo
Kathleen Haton	City of Rancho Santa Margarita
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Alice Sorenson	Regional Recreational Trails Advisory Committee
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Holly Veale	Supervisor Wilson's office
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## TABLE OF CONTENTS

### ACKNOWLEDGEMENTS

I.	INTRODUCTION AND OVERVIEW.....	1
II.	LAND USE EVALUATION CRITERIA AND PERFORMANCE OBJECTIVES .....	4
III.	PRELIMINARY EVALUATION OF THE RESERVE DESIGN CONCEPTS.....	14
IV.	PRELIMINARY ASSESSMENT OF URBAN RUNOFF ISSUES AND POTENTIAL SOLUTIONS .....	34

## I. Introduction and Overview

The South County Review and Evaluation (SCORE) program was initiated by Supervisor Tom Wilson to assist in the early stages of defining community goals and issues related to potential future development on the Rancho Mission Viejo property in South Orange County.

The overall goal of the SCORE program is to establish and maintain positive and constructive communications among all potentially interested parties including members of the Ranch development team, Orange County staff and appointed officials, representatives of all the neighboring jurisdictions, representatives of specific community interest groups, and members of the public at large.

### The SCORE Task Forces

Supervisor Wilson convened two task forces to study Ranch development issues, one to address land use and one to address urban runoff. Each task force was given a scope for action (the charge) and a set of ground rules for operation.

The charge to the *Land Use Task Force* was to:

- Provide independent advice and comment on planning issues related to the Ranch;
- Apply the land use evaluation criteria to a range of land use alternatives generated through the California Environmental Quality Act (CEQA), Natural Community Conservation Plan (NCCP), Habitat Conservation Plan (HCP) and the Special Area Management Plan (SAMP)/Master Streambed Alteration Agreement (MSAA) process;
- Assess how each alternative addresses the evaluation criteria; and
- Identify important issues and optional solutions consistent with the evaluation criteria.

The charge to the *Urban Runoff Task Force* was to:

- Provide independent advice and comment on urban runoff issues related to the Ranch;
- Generate a list of potential solutions to typical urban runoff problems;
- Conduct a preliminary assessment of the advantages and disadvantages of the potential solutions; and
- Identify potential applications of the optional solutions to the Ranch development.

## **SCORE Process Overview**

The SCORE process involved a variety of community participants representing different community elements and interests (see Appendix for a roster of task force members). A work program was developed for each task force involving a series of technical presentations and facilitated discussions.

The County retained the professional consulting firm of Moore, Iacofano, Goltsman (MIG), Inc., a multidisciplinary planning, design, communication and management firm to facilitate the SCORE Land Use and Urban Runoff Task Forces and to prepare a report of results from the two group efforts.

The SCORE process is organized in three phases.

**Phase One**, the subject of this report, involved the Land Use Task Force in a review and preliminary evaluation of a set of “reserve design concepts” indicating potential locations where development of some type may or may not occur. The Urban Runoff Task Force identified issues and evaluated potential solutions for managing urban runoff and protecting water quality regardless of development type or location. The *Land Use Task Force* met fourteen times during Phase One. The *Urban Runoff Task Force* met six times.

**Phase Two** of the SCORE process will involve the Land Use Task Force in a review and discussion of draft land use alternatives for the Ranch property using additional information provided by the Orange County Planning Department and the environmental resource agencies.

**Phase Three** will be a report to the SCORE Land Use and Urban Runoff Task Forces on the draft environmental impact report prepared by the Orange County Planning Department.

Supervisor Wilson’s charge “to provide advice and comment on planning issues related to the Ranch” was intended to produce a record of varied perspectives and issues to be used by the Orange County Planning and Development Services Department during the formal planning process. The review and evaluation of the land use alternatives by Orange County planning staff will require careful attention to and balancing of the issues and concerns presented and summarized in this report.

## **Organization of This Report**

This document provides an overview of the SCORE process and a report of preliminary conclusions from the two task forces. It is organized according to the following headings:

- Section II:** Presents the SCORE Land Use Task Force evaluation criteria with the performance objectives for each criteria as developed by the Task Force.
- Section III:** Provides a summary of the preliminary evaluation of the reserve design concepts for the Rancho Mission Viejo property that were provided to SCORE Land Use Task Force members for evaluation.
- Section IV:** Provides a summary of the detailed Urban Runoff Task Force conclusions.

## **Next Steps**

The next steps in the SCORE program will include:

- October 2002 A presentation of the SCORE Phase One Report to the Orange County Planning Commission;
- Spring 2003 A review of additional information from the environmental resource agencies, review and discussion of draft land use alternatives to be evaluated in the environmental impact analysis, and further consideration of reserve design concepts by SCORE Land Use Task Force members (SCORE Process Phase Two); and
- Fall 2003 A report on the draft environmental impact report by Orange County Planning Department staff to SCORE Land Use Task Force members (SCORE Process Phase Three).

Staff of the Orange County Planning Department will use the results of the Phase One SCORE process in their on-going planning process for the Ranch. Staff from the Planning Department and Supervisor Wilson's office will continue to oversee and monitor the next steps in the SCORE process.

## II. Land Use Evaluation Criteria And Performance Objectives

To aid the SCORE Land Use Task Force members in their deliberations, Supervisor Wilson provided a set of land use evaluation criteria that could be used to evaluate the quality of development proposed for the Rancho Mission Viejo property. The criteria encompass a broad range of issues including protection of natural resources, hydrologic functions, land use, housing and growth management, community services and facilities, historic preservation, transportation and community identity and governance.

For each of the fourteen (14) land use evaluation criteria, the SCORE Land Use Task Force created a set of "performance objectives" that would specify the desired qualities and characteristics of development on the Ranch property in more detail. The performance objectives include a mix of factors which apply variously to the regional planning, site planning and site design scales.

The original land use evaluation criteria statement and the list of performance objectives developed by the SCORE Land Use Task Force are presented below and on the following pages.

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### 1. HABITAT PROTECTION

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The plan provides for a comprehensive program that ensures the preservation and long-term protection, enhancement and management of identified habitats and related species.

#### *Performance Objectives*

- 1.1 Recognize "high resource value" areas by avoiding or carefully controlling development to protect the long-term habitat functions and values of these areas. Provisionally, the environmental resource agencies identified *Chiquita Canyon, the San Mateo Creek watershed and the San Juan Creek corridor* as potential areas with high resource value. More information on these areas from the environmental resource agencies will be forthcoming in Phase Two of the SCORE process. As of this writing, opinions on the task force differ as to whether development in these areas could or could not occur without significant damage to the biological resources.
- 1.2 Create a permanent habitat reserve system that is designed to protect the significant biological functions and values within the study area.
- 1.3 Assure that designated habitat protection and enhancement areas within the reserve system are protected and managed in accordance with long-term adaptive management programs (e.g., under the Natural Community

Conservation Plan (NCCP) program and/or the Habitat Conservation Program (HCP) keyed to identified habitat and species needs.

- 1.4 Consistent with future NCCP and/or HCP program requirements, locate and design new development areas to ensure protection of major species populations and wildlife movement corridors.
- 1.5 In locating and designing new development within the study area, focus new development in areas that are disturbed by current or historic land use activities or restore these “disturbed” areas in accordance with sound ecological design principles. In all cases, consider how any proposed new development may impact adjacent existing communities surrounding the Ranch property.
- 1.6 Ensure sufficient sources of funding to implement the habitat reserve system and adaptive management programs over the long term.
- 1.7 In all new development areas, design, develop and formulate codes, covenants and other property restrictions to minimize impacts of potential future human activities on nearby habitat reserve (e.g., pets, human access to the reserve areas, lighting, etc.).
- 1.8 Prohibit use of invasive non-native plant species adjacent to habitat reserve areas and use native species that do not pose a threat to the ongoing habitat value of the reserve.

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## **2. AQUATIC RESOURCES**

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The plan provides a comprehensive long-term program to protect and manage aquatic resources (including wetlands and riparian areas) and for the long-term protection, enhancement and restoration of these aquatic resources.

### ***Performance Objectives***

- 2.1 In general, direct new development toward areas with low environmental resource value and avoid or minimize new development in areas of high resource value.
- 2.2 Recognize the unique resource values of the *San Mateo Creek* watershed by avoiding or carefully controlling new development in the area (i.e., the areas in the southeastern portion of the Ranch). As of this writing, opinions on the Task Force differ as to whether development in the San Mateo Creek watershed could or could not occur without damage to this area's aquatic and hydrologic resources.

- 2.3 Protect the headwaters and upper portions of the watersheds.
- 2.4 Recognize the importance of the *Cristianitos, Gabino and Talega Creeks* as habitat for federally-protected aquatic species (e.g., the arroyo toad) by avoiding or carefully controlling development so as not to reduce their long-term functions and values. As of this writing, opinions on the Task Force differ as to whether development in the San Mateo Creek watershed could or could not occur without damage to this area's aquatic and hydrologic resources.
- 2.5 Design and locate new development to avoid and/or minimize downstream impacts to sensitive aquatic resources.
- 2.6 Preserve and protect the hydrologic functions and scenic values of *San Juan Creek*, including its function as habitat for listed aquatic species and its ability to continue as a major source of beach sand.
- 2.7 Design new land uses in designated development areas to minimize the adverse impacts of surface runoff on downstream aquatic resources by applying state of the art "natural treatment systems" (e.g., grassy swales, created wetlands, use of sandy areas capable of absorbing runoff) within the development areas rather than relying on engineered "point source" facilities or facilities located within the reserve to manage surface runoff (see Section IV of this report for a detailed report of the Urban Runoff Task Force findings).
- 2.8 Minimize new development in areas capable of absorbing significant runoff (e.g., alluvial sands, wetlands and riparian areas).
- 2.9 To the extent feasible, retain the natural character of existing streams and minimize the need for dams, concrete channels and other design approaches that tend to increase peak runoff events and increase potential impacts on downstream aquatic resources.

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### **3. FLOOD CONTROL**

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The plan provides for flood control protection in a manner that is consistent with protection of sensitive hydrologic and biologic resources.

#### *Performance Objectives*

- 3.1 Utilize "natural" methods of flood control including use of development setbacks, floodplain terraces, and other techniques.

- 3.2 Maintain current peak run-off levels downstream.
- 3.3 Maximize the groundwater recharge potential of existing watercourses.

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#### **4. HYDROLOGIC FUNCTIONS**

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The plan protects and, where feasible, enhances hydrologic functions and water quality by carefully designing new development areas in a manner that will contain, treat, naturally filter, and manage flows into creeks and flood control channels.

##### *Performance Objectives*

- 4.1 Minimize use of impervious surfaces.
- 4.2 Educate future residents and property owners about the use of native landscaping, the need to control disposal of toxic waste, and water conservation.
- 4.3 Work with the County Fire Authority to establish emergency vehicle access standards that minimize use of concrete and other impervious surfaces.
- 4.4 Evaluate any development proposal in the context of a total hydrologic system approach by understanding all upstream as well as downstream issues and impacts.

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#### **5. PUBLIC SERVICES, PUBLIC SCHOOLS AND RECREATION**

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The plan provides a wide-range of recreational activities and assures the completion and expansion of the county's multi-use trail system, linking public spaces, residential, recreation, schools, and commercial areas.

##### *Performance Objectives*

- 5.1 Maximize opportunities for creation of new parkland with provision for active and passive recreational programs.
- 5.2 Maximize opportunities to connect new development areas to the County trail system and provide adequate staging areas for all users.
- 5.3 Recognize that compact development will help minimize the cost of providing community services.

- 5.4 Maximize opportunities for joint use of community facilities and recreational areas (such as joint use of recreational facilities for public schools and city parks).
- 5.5 Encourage multi-use recreational facilities for all age groups.
- 5.6 Plan and design public facilities to maximize community identity and sense of place.
- 5.7 Mitigate impacts of any new development on existing public services, public schools, parks and recreational programs.
- 5.8 Ensure that all new facilities, programs and services are sustainable economically.
- 5.9 Provide a management and operations plan for all recreational facilities to ensure public access in perpetuity.

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## **6. HISTORIC RESOURCES**

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The plan recognizes certain historic areas of the Rancho Mission Viejo.

### *Performance Objectives*

- 6.1 Protect and preserve the historic and cultural resources of the Ranch including Cow Camp and Amantes.
- 6.2 Ensure protection of significant archeological sites such as Native American burial grounds.
- 6.3 Protect and enhance the visual qualities of the Ortega Highway Scenic Corridor.
- 6.4 Maintain the potential for experiencing intact native landscapes to the maximum extent feasible.

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## **7. HOUSING**

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The plan provides for a broad range of housing types and densities (including affordable and senior housing as negotiated with the County) and the ability of such housing to be absorbed within reasonable timeframes.

### *Performance Objectives*

- 7.1 Disperse and integrate a full range of housing types (including affordable housing, low income housing, workforce housing and senior housing) throughout the Ranch development.
- 7.2 Work with the developers of the Ranch property to establish and achieve a reasonable fair share affordable housing goal for development on the Ranch consistent with County Housing goals.
- 7.3 Ensure that housing on the Ranch includes options for renting and owning.
- 7.4 Locate affordable and senior housing in proximity to transit services.
- 7.5 Allow a sufficient total number of housing units overall to achieve a reasonable fair share affordable housing goal.
- 7.6 Provide incentives for creating below market rate housing through joint ventures involving developers, nonprofit organizations and government.

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## **8. FISCAL BALANCE OF LAND USES**

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The plan provides for a fiscally balanced mix of residential, industrial, commercial, and open space uses.

### *Performance Objectives*

- 8.1 Include provision for job-generating land uses within the Ranch development to achieve a reasonable housing to jobs ratio.
- 8.2 Retain flexibility in land use designations to allow opportunities for meeting changing economic and social circumstances over time.

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## **9. PUBLIC SAFETY**

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The plan provides for adequate public safety: fire, sheriff, emergency management facilities and services.

### *Performance Objectives*

- 9.1 Ensure that service delivery standards are sustainable for the life of this development.
- 9.2 Concentrate development to the extent practical to reduce service delivery costs and to improve quality of service.
- 9.3 Require “fire-safe” protection for homes (as defined by the Orange County Fire Authority) closest to natural resource areas. Provide an emergency evacuation plan for the entire development.
- 9.4 Ensure that residents living in “rural” conditions attain adequate service levels.
- 9.5 Work with surrounding communities to minimize impacts of any new development on the public safety services provided by those communities.

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## **10. GOVERNANCE**

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The plan results in a viable community that includes a model for future governance.

### *Performance Objectives*

- 10.1 Formulate a long range plan for community governance of the Ranch development in conjunction with the final master plan and in advance of any decisions or development approvals; ensure participation of representatives of all surrounding communities with LAFCO and County representatives in the community governance planning effort.
- 10.2 Ensure that the mix of land uses for the Ranch development plan provides long term fiscal viability for the municipality being created.
- 10.3 Ensure that the Ranch development pattern and layout results in a community with a distinct identity and sense of place, thereby encouraging a sense of belonging and community cohesion.

- 10.4 Determine feasible methods by which the communities of Ladera and Las Flores could be integrated with the new Ranch development or with existing surrounding incorporated cities.
- 10.5 Ensure that developed areas within the new Ranch development are interconnected functionally through roads and trails and visually through signage and symbols so as to further the goal of community identity.
- 10.6 Ensure that any proposed individual development areas are provided a reasonable governance solution.
- 10.7 Provide incentives (such as tax sharing) to encourage the potential incorporation and/or annexation of proposed new development areas to surrounding communities
- 10.8 Consider use of special districts in the interim period between pre-development and community build-out in order to provide additional government services and a structure for transition to a future permanent governance solution.

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## **11. GROWTH MANAGEMENT**

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Consistent with the Growth Management Element of the Orange County General Plan, the plan provides for development phasing concurrent with implementation of all necessary infrastructure adequate to serve future residents.

### *Performance Objectives*

- 11.1 Ensure that the County works collaboratively with all surrounding communities and representatives of the Ranch property owner to identify Ranch development impacts and appropriate mitigation measures including but not limited to transportation, infrastructure, urban runoff, public facilities, hillside development, natural, cultural and visual resources, etc.

Ensure that new development on the Ranch property minimizes impact on the quality of life, character and identity of the surrounding communities of Mission Viejo, San Juan Capistrano, San Clemente, Rancho Santa Margarita.

- 11.3 Minimize conflicts between development on the Ranch property and Camp Pendleton by ensuring that the type and location of development areas are compatible with military operations.

- 11.4 Require that all growth impact issues be identified in advance and mitigated as a condition of development approval.

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## **12. TRANSPORTATION**

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The plan provides for a system of arterial roadways that is adequate to serve current and future residents, coordinates with adjacent cities and is consistent with regional transportation planning needs.

### *Performance Objectives*

- 12.1 Ensure that the Ranch development plan is consistent with existing County transportation plans and policies.
- 12.2 Plan the Ranch development (i.e., designation of land uses and selection of housing types) to enhance the viability of public transit over the long term including bus and rail.
- 12.3 Identify opportunities for expanding, enhancing and/or managing the capacity of the arterial highway system to accommodate Ranch development.
- 12.4 Consider establishing a multi-modal type transportation facility in conjunction with the town center area of the Ranch development.
- 12.5 Coordinate the planning and location of transportation systems in relation to habitat corridors.
- 12.6 Locate job-generating land uses on the Ranch development near future potential transportation corridors.
- 12.7 Ensure that the proposed development areas are served by reliable transportation connections to the job centers of North County and to the Interstate 5 freeway.
- 12.8 Mitigate transportation impacts of any new development on surrounding communities.

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### **13. PROPERTY RIGHTS**

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The plan recognizes the owner's private property rights and the need to provide for an economically viable mix of land uses and intensities.

#### *Performance Objectives*

- 13.1 Ensure that any resulting development agreements for the Ranch property are fair for all parties. (An economically viable development plan ensures that the development will be completed successfully including the fulfillment of all developer obligations, environmental mitigations and agreements.)
- 13.2 Ensure that any final Ranch development plan balances property owner rights with the needs of the Orange County community.
- 13.3 Recognize the value to the community at large in having the Ranch in single ownership. (Single ownership provides a greater opportunity for the community to achieve its goals during the development agreement process.)

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### **14. GEOGRAPHIC FEATURES**

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The plan identifies and, where feasible, protects significant natural geographic features.

#### *Performance Objectives*

- 14.1 Discourage development on ridgelines.
- 14.2 Limit development in areas that are visible from surrounding communities.
- 14.3 Use the distinctive geographic features of the Ranch Property and the surrounding communities to strengthen the identity of existing and proposed new communities.

### III. Preliminary Evaluation of the Reserve Design Concepts

The SCORE Land Use Task Force evaluated a set of four (4) development patterns or “reserve design concepts” which could be applied to the Rancho Mission Viejo property. The reserve design concepts were formulated through the Natural Communities Conservation Plan (NCCP) program and the Special Area Management Program (SAMP) by the environmental resource agencies (i.e., US Fish and Wildlife Service, the California Department of Fish and Game, and the US Army Corps of Engineers). They were provided to the SCORE Land Use Task Force for preliminary evaluation purposes.

The SCORE Land Use Task Force conducted their evaluation of the reserve design concepts using the fourteen (14) land use evaluation criteria and their corresponding performance objectives as a framework.

Because details of the reserve design concepts, existing environmental constraints and land use alternatives remained sketchy, SCORE Land Use Task Force members recognized that a much more thorough evaluation of the reserve design concepts will be necessary. More detailed information on the potential land uses within proposed development areas as well as more specific data about existing ecosystems and their biological requirements will support a more in-depth evaluation of all reserve design concepts. A detailed evaluation will be conducted through the County Planning process.

The four reserve design concepts evaluated by the SCORE Land Use Task Force are:

**Reserve Design Concept One:** Directs all development on the most western portion of the Ranch property and proposes environmental restoration of current lease areas upon expiration of those leases.

**Reserve Design Concept Two:** Directs development to the most western portion of the Ranch and along Ortega Highway to the north and south near the center of the Ranch property and adjacent to San Juan Capistrano.

**Reserve Design Concept Three:** Includes most of the areas shown in Reserve Design Concept Two with the addition of development areas at the existing cement plant operation and Chiquita Canyon, and somewhat larger development areas for Gobernadora Canyon than Reserve Design Concept Two.

**Reserve Design Concept Four\*:** Provides a range of development areas as proposed by the Rancho Mission Viejo.

The SCORE Land Use Task Force preliminary evaluation of these four Reserve Design Concepts is summarized on the following pages.

\* This Reserve Design Concept was labeled Reserve Design Concept Five in the NCCP/SAMP process.

[New Figure: The Four Reserve Design Concepts Reviewed By SCORE]

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## **RESERVE DESIGN CONCEPT ONE**

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This reserve design concept concentrates all development on the most western portion of the Ranch property and proposes environmental restoration of current lease areas upon expiration of those leases (see Figure 1).

SCORE Land Use Task Force member comments on this reserve design concept are organized according to the land use criteria headings below:

### ***Criteria #1: Habitat Protection***

- 1.1 Concentration of proposed development areas protects the natural resources and sensitive species of the San Mateo watershed, Chiquita Creek and Cristianitos Creek areas.
- 1.2 Proposed development areas (as drawn) may impact fairy shrimp habitat.
- 1.3 Proposed development areas (as drawn) may not provide adequate protection for the San Juan Creek riparian corridor.

### ***Criteria #2: Aquatic Resources***

- 2.1 Concentration of proposed development areas protects the natural resources and sensitive species of the San Mateo watershed, Chiquita Creek and Cristianitos Creek areas.
- 2.2 Proposed development areas (as drawn) may not provide adequate protection for San Juan Creek riparian corridor.

### ***Criteria #3: Flood Control***

- 3.1 Proposed development areas appear to concentrate urban storm water runoff in the San Juan Creek watershed.
- 3.2 Proposed development areas appear to allow for use and deployment of all state-of-the-art flood control techniques.

***Criteria #4: Hydrologic Functions***

- 4.1 Proposed development areas appear to allow for use and deployment of all state-of-the-art storm water management techniques.

***Criteria #5: Public Services, Schools and Recreation***

- 5.1 Concentration of proposed development areas will impact the adjacent community of San Juan Capistrano if high densities and intensities of land use are assumed.
- 5.2 Proposed development may result in a less developed recreational trail system within the Ranch property and may limit the County's ability to require full implementation of the Countywide Trail system. (Trail connections from proposed development areas to the regional trail system are still feasible.)
- 5.3 Careful study of proposed development will be necessary to determine if cost-effective delivery of public services, schools and recreation is feasible.

***Criteria #6: Historic Resources***

- 6.1 Proposed development areas protect existing historic and cultural resources that are known at this time.

***Criteria #7: Housing***

- 7.1 Affordable housing opportunities may be limited unless relatively high densities are assumed or large public subsidies are provided to offset land and development costs.
- 7.2 The range of housing types typical of South Orange County will be limited given the relatively small and concentrated development area.

***Criteria #8: Fiscal Balance of Land Uses***

- 8.1 Proposed development areas provide limited land supply for new development.

***Criteria #9: Public Safety***

- 9.1 Careful study of proposed development areas will be necessary to determine if cost-effective delivery of public services is feasible.
- 9.2 Service impacts on surrounding communities will require careful study.

***Criteria #10: Governance***

- 10.1 The community governance solution for the proposed new development areas should address the existing unincorporated communities of Ladera and Las Flores. The governance solution should be determined in conjunction with final approvals for any development of the Rancho Mission Viejo property. All options should be explored.

***Criteria #11: Growth Management***

- 11.1 The principle of “infrastructure concurrency” (all required infrastructure development occurs as development occurs) will apply to all development plans.
- 11.2 Proposed development areas do not appear to be compatible with the existing character and quality of development in the surrounding communities if high densities and intensities of land use are assumed.
- 11.3 Concentration of proposed development and adjacency to existing development may help minimize service delivery and infrastructure development costs.

***Criteria #12: Transportation***

- 12.1 Proposed development areas will be difficult to serve with rail transit due to terrain.
- 12.2 The proposed development may impact Ortega Highway and the community of San Juan Capistrano.

***Criteria #13: Private Property Rights***

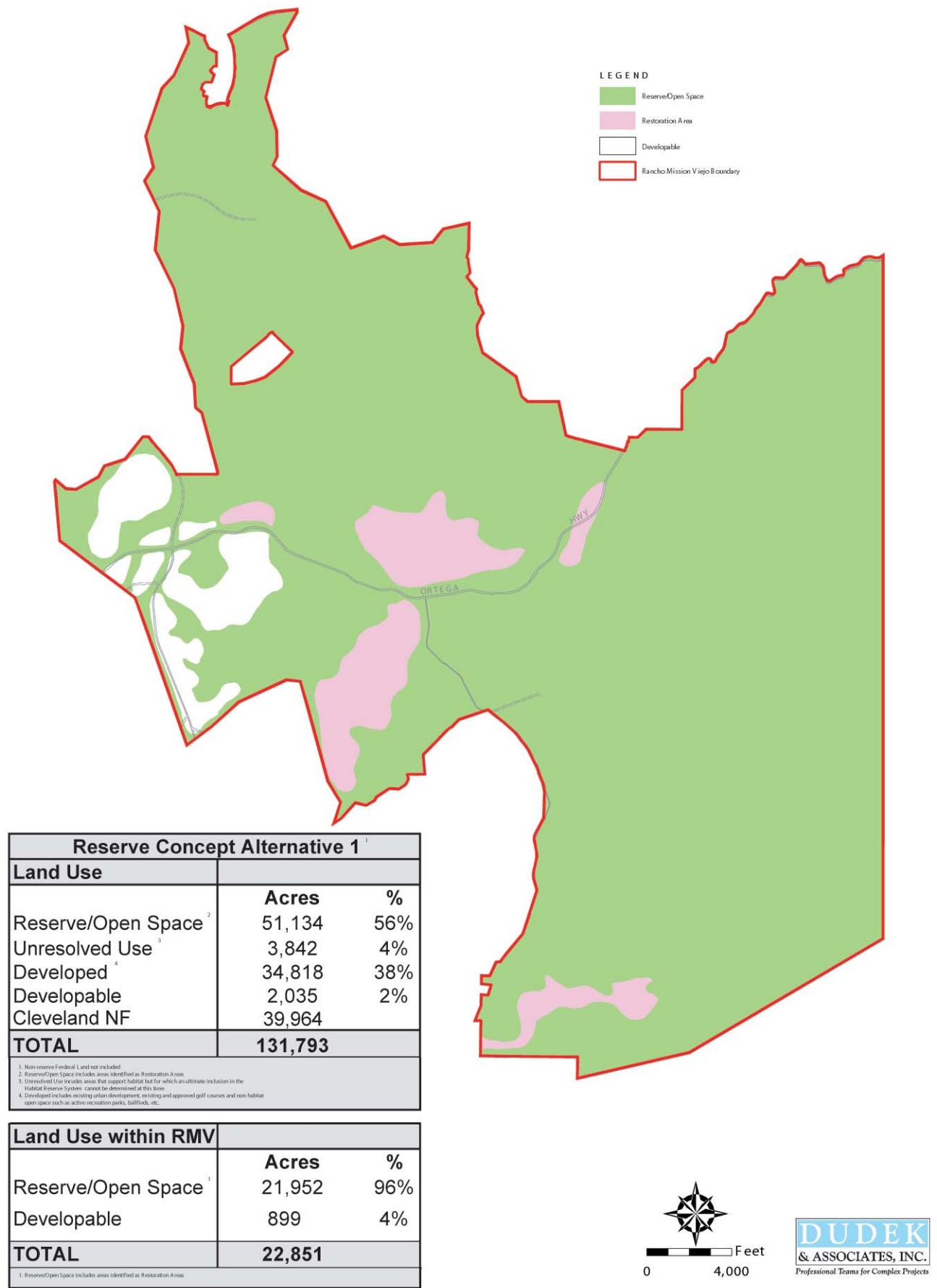
- 13.1 It appears that the concentration of development areas will result in very high densities and intensities of land use in order to achieve an economically viable development.

- 13.2 If public ownership of any portion of the Ranch property is pursued, less development potential for the Ranch property owner will increase the cost of land acquisition for public open space purposes. The goal is to find the right balance between amount of development and habitat preservation.

*Criteria #14: Geographic Features*

- 14.1 Proposed development areas (as drawn) impact hillsides and ridgelines which are viewable from San Juan Capistrano.

# Southern Subregion NCCP Reserve Concept Alternative 1 within Rancho Mission Viejo



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## **RESERVE DESIGN CONCEPT TWO**

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This reserve design concept directs development to the most western portion of the Ranch and along Ortega Highway to the north and south near the center of the Ranch property and adjacent to San Juan Capistrano (see Figure 2).

SCORE Land Use Task Force member comments on this reserve design concept are organized according to the land use criteria headings below:

### ***Criteria #1: Habitat Protection***

- 1.1 Concentration of proposed development areas protects the natural resources and sensitive species of the San Mateo watershed, Chiquita Creek and Cristianitos Creek areas.
- 1.2 Proposed development areas (as drawn) may impact fairy shrimp habitat.
- 1.3 Proposed development areas (as drawn) may not provide adequate protection for San Juan Creek riparian corridor.

### ***Criteria #2: Aquatic Resources***

- 2.1 Concentration of proposed development areas protects the natural resources and sensitive species of the San Mateo watershed, Chiquita Creek and Cristianitos Creek areas.
- 2.2 Proposed development areas (as drawn) may not provide adequate protection for San Juan Creek riparian corridor.

### ***Criteria #3: Flood Control***

- 3.1 Proposed development areas appear to concentrate urban storm water runoff in the San Juan Creek watershed.
- 3.2 Proposed development areas appear to allow for use and deployment of all state-of-the-art flood control techniques.

***Criteria #4: Hydrologic Functions***

- 4.1 Proposed development areas appear to allow for use and deployment of all state-of-the-art storm water management techniques.

***Criteria #5: Public Services, Schools and Recreation***

- 5.1 Proposed development may result in a less developed recreational trail system within the Ranch property and may limit the County's ability to require full implementation of the Countywide Trail system. (Trail connections from proposed development areas to the regional trail system are still feasible.)
- 5.2 Careful study of proposed development will be necessary to determine if cost-effective delivery of public services, schools and recreation is feasible.

***Criteria #6: Historic Resources***

- 6.1 Proposed development areas protect existing historic and cultural resources that are known at this time.

***Criteria #7: Housing***

- 7.1 Affordable housing opportunities may be limited unless relatively high densities are assumed or public subsidies are provided to offset land and development costs.

***Criteria #8: Fiscal Balance of Land Uses***

- 8.1 Proposed development areas provide limited land supply for new development.

***Criteria #9: Public Safety***

- 9.1 Careful study of proposed development will be necessary to determine if cost-effective delivery of public services is feasible.

#### ***Criteria #10: Governance***

- 10.1 The community governance solution for the proposed new development areas should address the existing unincorporated communities of Ladera and Las Flores. The governance solution should be determined in conjunction with final approvals for any development of the Rancho Mission Viejo property. All options should be explored.

#### ***Criteria #11: Growth Management***

- 11.1 The principle of “infrastructure concurrency” (all required infrastructure development occurs as development occurs) will apply to all development plans.
- 11.2 Proposed development areas do not appear to be compatible with the existing character and quality of development in the surrounding communities if relatively high densities and intensities of land uses are assumed.
- 11.3 The potential for more concentrated patterns of development may help minimize service delivery and infrastructure development costs.

#### ***Criteria #12: Transportation***

- 12.1 The relatively concentrated development pattern will help make public transit more viable.
- 12.2 The proposed development may result in major impacts on Ortega Highway and on San Juan Capistrano.

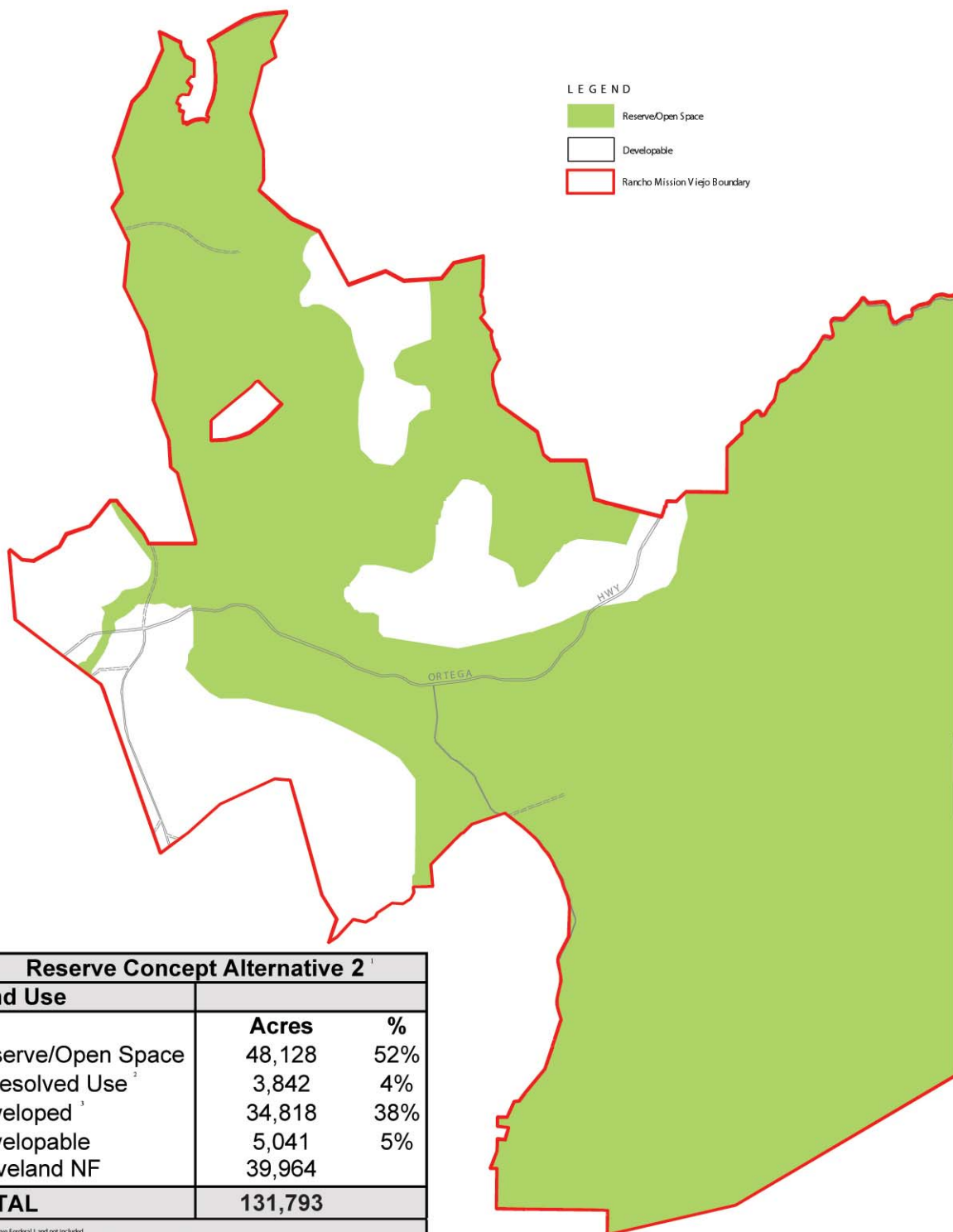
#### ***Criteria #13: Private Property Rights***

- 13.1 It appears that the concentration of development areas will result in very high densities and intensities of land use in order to achieve a more economically viable development.
- 13.2 If public ownership of any portion of the Ranch property is pursued, greater development potential for the Ranch property owner will help offset the cost of land acquisition for public open space purposes. The goal is to find the right balance between amount of development and habitat preservation.

*Criteria #14: Geographic Features*

- 14.1 Proposed development areas (as drawn) impact hillsides and ridgelines which are viewable from San Juan Capistrano.

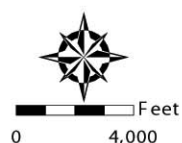
# Southern Subregion NCCP Reserve Concept Alternative 2 within Rancho Mission Viejo



Reserve Concept Alternative 2 <sup>1</sup>		
Land Use		
	<b>Acres</b>	<b>%</b>
Reserve/Open Space	48,128	52%
Unresolved Use <sup>2</sup>	3,842	4%
Developed <sup>3</sup>	34,818	38%
Developable	5,041	5%
Cleveland NF	39,964	
<b>TOTAL</b>	<b>131,793</b>	

1. Non-reserve Federal Land not included.  
2. Unresolved Use includes areas that support habitat but for which an ultimate inclusion in the Habitat Reserve System cannot be determined at this time.  
3. Developed includes existing urban development, existing and approved golf courses and non-habitat open space such as active recreation parks, ballfields, etc.

Land Use within RMV		
	<b>Acres</b>	<b>%</b>
Reserve/Open Space	18,952	83%
Developable	3,899	17%
<b>TOTAL</b>	<b>22,851</b>	



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## RESERVE DESIGN CONCEPT THREE

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This reserve design concept includes most of the areas shown in Reserve Design Concept Two with the addition of development areas at the existing cement plant operation and Chiquita Canyon, and somewhat larger development areas for Gobernadora Canyon than Reserve Design Concept Two (see Figure 3).

SCORE Land Use Task Force member comments on this reserve design concept are organized according to the land use criteria headings below:

### *Criteria #1: Habitat Protection*

- 1.1 Proposed development areas impact the natural resources and sensitive species of the Chiquita Creek and Cristianitos Creek areas, and to a lesser extent, the San Mateo Watershed.

### *Criteria #2: Aquatic Resources*

- 2.1 Proposed development areas impact the natural resources and sensitive species of the Chiquita Creek and Cristianitos Creek areas, and to a lesser extent, the San Mateo Watershed.

### *Criteria #3: Flood Control*

- 3.1 Proposed development areas will concentrate urban storm water runoff in the San Juan Creek and Cristianitos Watersheds.
- 3.2 Proposed development areas appear to allow for use and deployment of all state-of-the-art flood control techniques.

### *Criteria #4: Hydrologic Functions*

- 4.1 Proposed development areas appear to allow for use and deployment of all state-of-the-art storm water management techniques.

***Criteria #5: Public Services, Schools and Recreation***

- 5.1 Proposed development areas provide for trail connections inside and outside the property.5.2 Careful study of proposed development will be necessary to determine if cost-effective delivery of public services, schools and recreation is feasible.

***Criteria #6: Historic Resources***

- 6.1 Proposed development areas protect existing historic and cultural resources that are known at this time.

***Criteria #7: Housing***

- 7.1 Proposed development areas will provide opportunities for a broad range of housing types and income affordability levels.

***Criteria #8: Fiscal Balance of Land Uses***

- 8.1 Proposed development areas appear to provide opportunities to achieve a reasonable balance of land uses.

***Criteria #9: Public Safety***

- 9.1 Careful study will be necessary to determine if cost-effective delivery of public services is feasible.

***Criteria #10: Governance***

- 10.1 The community governance solution for the proposed new development areas should address the existing unincorporated communities of Ladera and Las Flores. The governance solution should be determined in conjunction with final approvals for any development of the Rancho Mission Viejo property. All options should be explored.

### ***Criteria #11: Growth Management***

- 11.1 The principle of “infrastructure concurrency” (all required infrastructure development occurs as development occurs) will apply to all development plans.

### ***Criteria #12: Transportation***

- 12.1 Further study of existing arterial highways surrounding the proposed ranch development will determine if potential highway widening and extensions are needed. However, potential highway widening and extensions may be limited due to physical and/or environmental constraints.
- 12.2 The proposed development should be planned to maximize the potential for the area to be served by public transit.
- 12.3 The area described as the potential “town center” should be considered as a possible site for an inter-modal (i.e., bus, rail, bike) transportation facility.

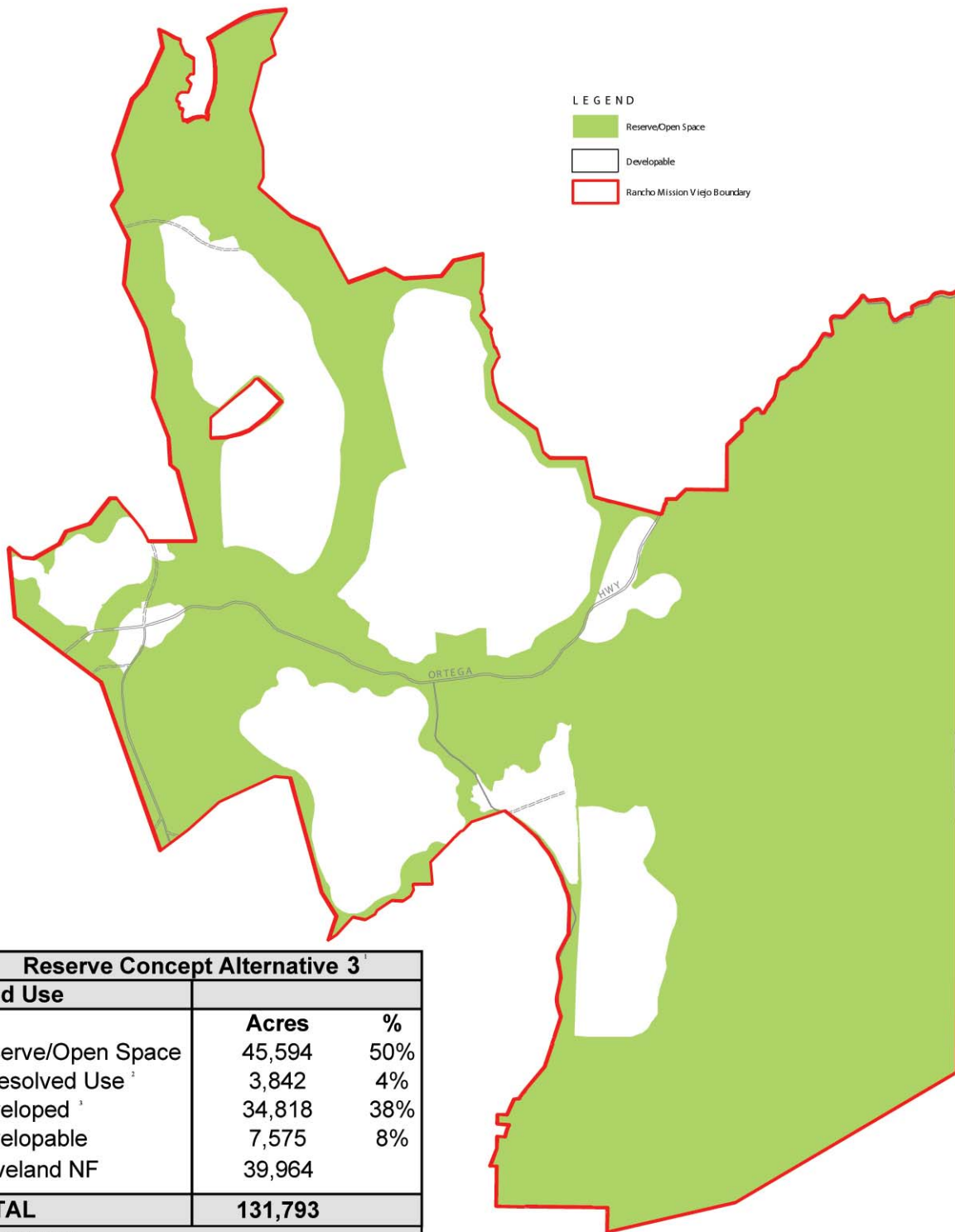
### ***Criteria #13: Private Property Rights***

- 13.1 If public ownership of any portion of the Ranch property is pursued, greater development potential for the Ranch property owner will help offset the costs of land acquisition for public open space purposes. The goal is to find the right balance between amount of development and habitat preservation.

### ***Criteria #14: Geographic Features***

- 14.1 Proposed development areas should respect the hillside development ordinances and viewsheds of San Juan Capistrano and San Clemente.

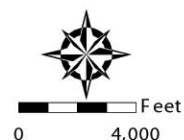
# Southern Subregion NCCP Reserve Concept Alternative 3 within Rancho Mission Viejo



Reserve Concept Alternative 3 <sup>1</sup>		
Land Use	Acres	%
Reserve/Open Space	45,594	50%
Unresolved Use <sup>2</sup>	3,842	4%
Developed <sup>3</sup>	34,818	38%
Developable	7,575	8%
Cleveland NF	39,964	
<b>TOTAL</b>	<b>131,793</b>	

<sup>1</sup> Non-reserve Federal Land not included.  
<sup>2</sup> Unresolved Use includes areas that support habitat but for which an ultimate inclusion in the Habitat Reserve System cannot be determined at this time.  
<sup>3</sup> Developed includes existing urban development, existing and approved golf courses and non-habitat open space such as active recreation parks, ballfields, etc.

Land Use within RMV		
Land Use	Acres	%
Reserve/Open Space	16,416	72%
Developable	6,435	28%
<b>TOTAL</b>	<b>22,851</b>	



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## **RESERVE DESIGN CONCEPT FOUR**

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This reserve design concept provides a range of development areas as proposed by Rancho Mission Viejo (see Figure 4).

SCORE Land Use Task Force member comments on this reserve design concept are organized according to the land use criteria headings below:

### ***Criteria #1: Habitat Protection***

- 1.1 Proposed development areas impact the natural resources and sensitive species of the San Mateo Watershed, and the Chiquita Creek and Cristianitos Creek areas.

### ***Criteria #2: Aquatic Resources***

- 2.1 Proposed development areas impact the natural resources and sensitive species of the San Mateo Watershed, and the Chiquita Creek and Cristianitos Creek areas.

### ***Criteria #3: Flood Control***

- 3.1 Proposed development areas appear to allow for use and deployment of all state-of-the-art flood control techniques.
- 3.2 Proposed development areas will concentrate urban storm water runoff in the San Juan Creek and Cristianitos Watersheds.

### ***Criteria #4: Hydrologic Functions***

- 4.1 Proposed development areas appear to allow for use and deployment of all state-of-the-art storm water management techniques.

### ***Criteria #5: Public Services, Schools and Recreation***

- 5.1 Proposed development areas provide for trail connections to the regional trail system as well as opportunities for local trails on the Ranch property.

- 5.2 Careful study of proposed development areas will be necessary to determine if cost-effective delivery of public services, schools and recreation is feasible.

***Criteria #6: Historic Resources***

- 6.1 Proposed development areas protect existing historic and cultural resources that are known at this time.

***Criteria #7: Housing***

- 7.1 Proposed development areas will provide opportunities for a broad range of housing types and income affordability levels.

***Criteria #8: Fiscal Balance of Land Uses***

- 8.1 Proposed development areas appear to provide opportunities to achieve a reasonable balance of land uses.

***Criteria #9: Public Safety***

- 9.1 Careful study of proposed development areas will be necessary to determine if cost-effective delivery of public services is feasible.

***Criteria #10: Governance***

- 10.1 The community governance solution for the proposed new development areas should address the existing unincorporated communities of Ladera and Las Flores. The governance solution should be determined in conjunction with final approvals for any development of the Rancho Mission Viejo property. All options should be explored.

***Criteria #11: Growth Management***

- 11.1 The principle of “infrastructure concurrency” (all required infrastructure development occurs as development occurs) will apply to all development plans.
- 11.2 Residential development in the TRW area may be incompatible with on-going military operations at Camp Pendleton. A disclosure statement regarding the

proximity of on-going military operations at Camp Pendleton will most likely be required.

***Criteria #12: Transportation***

- 12.1 Further study of existing arterial highways surrounding the proposed ranch development will determine if potential highway widening and extensions are needed. However, potential highway widening and extensions may be limited due to physical and/or environmental constraints.
- 12.2 The proposed development should be planned to maximize the potential for the area to be served by public transit.
- 12.3 The area described as the potential “town center” should be considered as a possible site for an inter-modal (i.e., bus, rail, bike) transportation facility.

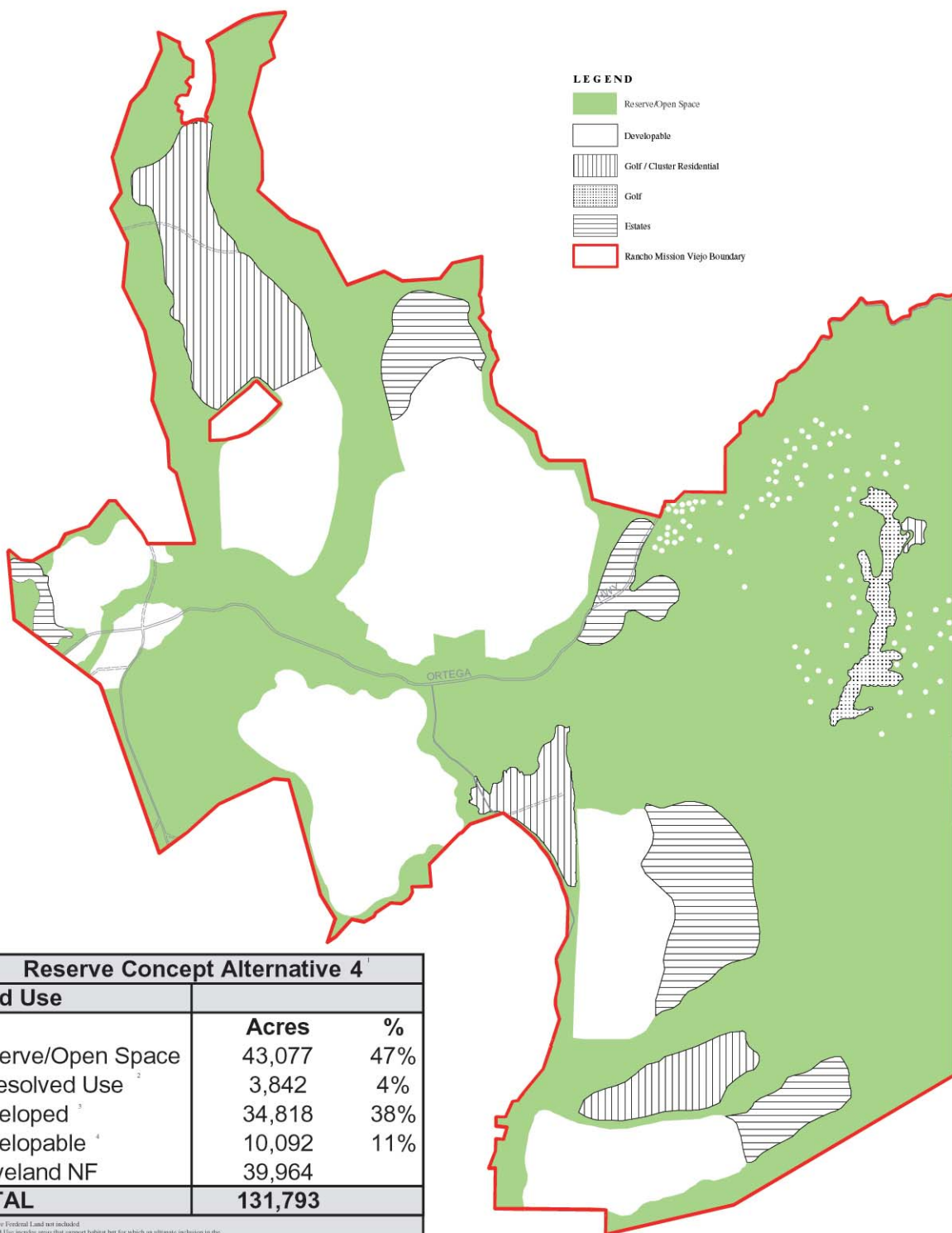
***Criteria #13: Private Property Rights***

- 13.1 If public ownership of any portion of the Ranch property is pursued, greater development potential for the Ranch property owner will help offset the cost of land acquisition for public open space purposes. The goal is to find the right balance between amount of development and habitat preservation.

***Criteria #14: Geographic Features***

- 14.1 Proposed development areas should respect the hillside development ordinances and viewsheds of San Juan Capistrano and San Clemente.

# Southern Subregion NCCP Reserve Concept Alternative 4 within Rancho Mission Viejo



Reserve Concept Alternative 4 <sup>1</sup>		
Land Use	Acres	%
Reserve/Open Space	43,077	47%
Unresolved Use <sup>2</sup>	3,842	4%
Developed <sup>3</sup>	34,818	38%
Developable <sup>4</sup>	10,092	11%
Cleveland NF	39,964	
<b>TOTAL</b>	<b>131,793</b>	

1. Non-reserve Federal Land not included.  
2. Unresolved Use includes areas that support habitat but for which an ultimate inclusion in the Habitat Reserve System cannot be determined at this time.  
3. Developed includes existing urban development, existing and approved golf courses and non-habitat open space such as active recreation parks, ballfields, etc.  
4. Developable includes golf/cluster residential, golf, and estates within RMV.

Land Use within RMV		
Land Use	Acres	%
Reserve/Open Space <sup>1</sup>	13,894	61%
Developable	8957	39%
<b>TOTAL</b>	<b>22,851</b>	

1. Developable includes golf / cluster residential, golf, and estates within RMV.

#### IV. Preliminary Assessment of Potential Urban Runoff Issues and Solutions

The SCORE Urban Runoff Task Force identified a list of issues to be addressed in order to arrive at a comprehensive storm water management program for the Ranch property.

The issues that were discussed by the Task Force include:

- A. **Sediment Transport:** The natural movement of sediment throughout a watershed.
- B. **Pollutant Control:** The reduction and/or removal of harmful chemicals or other additives that alter the physical, chemical or biological properties of the environment.
- C. **Vegetation Management:** The use and control of native and non-native plant species in order to reduce runoff, provide for increased infiltration and remove bacteria.
- D. **Fish Transit:** The ability of fish to migrate naturally in streams and creeks.
- E. **Fine Sediment:** The natural movement of fine sediments throughout a watershed.
- F. **Sewer Impacts:** The use of technology, maintenance procedures, and back-up systems to reduce impacts and/or catastrophic failures of the wastewater infrastructure.
- G. **Wise Water Use:** The reduction and/or reuse of urban runoff to maintain normal downstream flows.
- H. **Flood Control:** Methods and procedures for controlling flood flows.

For each issue, the Urban Runoff Task Force identified possible solutions based on proven, state-of-the-art technologies. The Task Force conducted a preliminary assessment of the advantages and disadvantages of deploying each solution, identified the major public agencies that may need to be consulted or that may need to grant approvals for their use, and determined the appropriate locations or applications where the solution would fit within the total hydrologic system of the Ranch.

Successful resolution of these issues will require the involvement and coordination of many public review and approval agencies.

A summary of the Urban Runoff Task Force preliminary assessment of potential solutions is provided in the series of tables that follow.

## Summary of Urban Runoff Issues & Potential Solutions for Protecting Water Quality

Potential Solutions	Potential Advantages	Potential Disadvantages	Potential Major Agency Involvement	Potential Applications	Urban Runoff Issue(s) Addressed
<b>1. Fuel Management Using Controlled Burns</b>	<p>Restores natural systems</p> <p>Protects residences</p> <p>Avoids catastrophic fires that increase erosion</p> <p>Replenishes beach sand</p>	<p>Could result in temporary habitat loss and erosion</p>	<p>California Department of Forestry and Fire Protection</p> <p>Orange County Fire Authority</p> <p>US Forest Service</p>	<p>All undeveloped areas on the Ranch property</p>	<p>Sediment Transport</p> <p>Vegetation Management</p>
<b>2. On-Site Swales and Channels</b> (incorporating native plant materials as filters)	<p>Reduces creek erosion</p> <p>Protects wetlands</p> <p>Creates potential passive recreational opportunities</p> <p>May retain or prohibit undesirable sediments from moving downstream</p> <p>Provides aesthetic opportunities</p> <p>Saves water</p>	<p>May send undesirable sediments downstream</p> <p>Requires significant on-going maintenance and vegetation removal</p> <p>Attracts endangered species and therefore requires a “safe harbor” maintenance agreement</p> <p>Requires regulatory review</p>	<p>Orange County Flood Control</p> <p>Orange County Department of Harbors, Beaches and Parks</p> <p>US Army Corps of Engineers</p> <p>Neighboring cities of Dana Point, San Juan Capistrano and San Clemente</p> <p>Environmental Protection Agency</p> <p>California Dept. of Fish and Game</p> <p>US Fish and Wildlife Service</p> <p>Regional Water Quality Control Board (RWQCB)</p>	<p>Upper and lower Ranch areas</p>	<p>Sediment Transport</p> <p>Pollutant Control</p> <p>Vegetation Management</p> <p>Fine Sediment</p>

Potential Solutions	Potential Advantages	Potential Disadvantages	Potential Major Agency Involvement	Potential Applications	Urban Runoff Issue(s) Addressed
<b>3. Chemical Management</b>  (Includes use of: pesticides, herbicides, and/or fertilizers)	Provides opportunities for public education on the proper use of pesticides  Reduces pesticides, herbicides and fertilizers from reaching oceans and creeks	Requires enforcement  May constrain vector control efforts	Multiple County of Orange Departments  Regional Water Quality Board	All developed areas on the Ranch property	Pollutant Control  Vegetation Management  Fine Sediment
<b>4. Site Design</b> (e.g., clustering, etc.)	Provides opportunity for shared resources for residents (i.e., shared driveways)  Provides opportunity for use of cost-effective technology  Minimizes impervious surfaces	Requires specific housing types resulting in limited housing type flexibility  May require extra land for deployment of natural systems	Multiple County of Orange Departments	All developed areas on the Ranch property	Sediment Transport  Pollutant Control  Vegetation Management  Fine Sediment  Sewer Impacts  Wise Water Use  Flood Control

Potential Solutions	Potential Advantages	Potential Disadvantages	Potential Major Agency Involvement	Potential Applications	Urban Runoff Issue(s) Addressed
<b>5. Street Design</b>	Includes an array of techniques such as inverted medians, pervious pavements, green cul de sacs, and narrow streets  Reduces total runoff through greater use of pervious surfaces	May reduce traffic capacity  May restrict access for public safety vehicles  May increase movement of undesirable sediments  May result in higher utility design and installation costs  May result in reduced structural integrity of surface materials (less ability to support large vehicles)  May challenge flood control design parameters	Multiple County of Orange Departments  Orange County Fire Authority	All developed areas on the Ranch property	Sediment Transport  Pollutant Control  Vegetation Management  Fine Sediment  Sewer Impacts  Wise Water Use  Flood Control
<b>6. “Easy Maintenance” Sewers</b> (i.e., use of plastic pipes and other new technology)	Utilizes proven technology  Uses fewer joints  May effectively lower costs	May be unproven technology with unknown lifespan and durability	Local water districts	All developed areas on the Ranch property	Pollutant Control  Sewer Impacts

Potential Solutions	Potential Advantages	Potential Disadvantages	Potential Major Agency Involvement	Potential Applications	Urban Runoff Issue(s) Addressed
<p><b>7. Biofilters</b></p> <p>On-site swales and channels that incorporate native plant materials as filters</p> <p>Biofilters, also known as “vegetated swales”, are vegetated slopes and channels designed and maintained to transport shallow depths of runoff</p>	<p>Provides ability to reduce suspended sediments</p> <p>Provides opportunity to kill bacteria with natural UV process</p> <p>Reduces runoff speed and volume</p> <p>Provides an opportunity for sediments and particulates to be filtered and degraded</p> <p>Provides storm water infiltration, which removes pollutants and reduces runoff volumes.</p>	<p>Maintenance costs are unknown</p> <p>Relatively new technique so individual results may vary</p> <p>May create an on-going maintenance issue</p>	<p>Regional Water Quality Control Board</p> <p>Multiple County of Orange Departments</p>	<p>Upper and lower Ranch areas</p>	<p>Sediment Transport</p> <p>Pollutant Control</p> <p>Vegetation Management</p> <p>Fine Sediment</p> <p>Wise Water Use</p> <p>Flood Control</p>

Potential Solutions	Potential Advantages	Potential Disadvantages	Potential Major Agency Involvement	Potential Applications	Urban Runoff Issue(s) Addressed
<b>8. Structural Best Management Practices</b> (Examples include: media filters, ozone systems, UV systems, Hydrocarbon filters, and storm-drain culverts)	Enhances water quality  Uses proven techniques  Allows for numerous new technologies to choose from  Reduces downstream process	Requires institutional agreement	Regional Water Quality Control Board  Multiple County of Orange Departments  California Department of Fish and Game  US Army Corps of Engineers	All developed areas on the Ranch property	Sediment Transport  Pollutant Control  Vegetation Management  Fine Sediment  Sewer Impacts  Wise Water Use  Flood Control

Potential Solutions	Potential Advantages	Potential Disadvantages	Potential Major Agency Involvement	Potential Applications	Urban Runoff Issue(s) Addressed
<b>9. Native Vegetation and Landscaping</b>	<p>Reduces irrigation requirements</p> <p>Reduces runoff</p> <p>Provides habitat</p> <p>Enables faster re-growth after fires consume area</p> <p>Reduces fire hazard impacts if designed correctly.</p>	<p>May not be visually appealing to the public</p> <p>Requires technical knowledge for correct installation and management</p> <p>Allows for greater opportunities for interaction between wild and residential areas thereby increasing the potential for wildlife conflicts</p> <p>May require long-term management agreements with resource agencies</p>	<p>Multiple County of Orange Departments</p> <p>Orange County Fire Authority</p> <p>California Department of Fish and Game</p> <p>US Fish and Wildlife Service</p>	All developed areas on Ranch property	<p>Sediment Transport</p> <p>Pollutant Control</p> <p>Vegetation Management</p> <p>Fine Sediment</p> <p>Wise Water Use</p> <p>Flood Control</p>
<b>10. Unimpeded Streams and Natural Channels</b>	<p>Provides an opportunity for fish ladders</p> <p>Provides relatively inexpensive solutions</p> <p>May decrease water temperature</p>	<p>Requires careful and perhaps costly design</p> <p>May affect flow</p>	<p>US Fish and Wildlife Service</p> <p>California Department of Fish and Game</p> <p>National Marine Fisheries Service</p> <p>US Army Corps of Engineers</p>	San Mateo and San Juan Creek Watersheds	<p>Sediment Transport</p> <p>Pollutant Control</p> <p>Vegetation Management</p> <p>Fish Transit</p> <p>Fine Sediment</p> <p>Flood Control</p>

Potential Solutions	Potential Advantages	Potential Disadvantages	Potential Major Agency Involvement	Potential Applications	Urban Runoff Issue(s) Addressed
<b>11. In-Line Facility Placement</b> (Use of infrastructure similar to sewers, which carries runoff to another location)	Provides exposed water features  Provides groundwater recharge  Provides recreational opportunities  May reduce flood impacts  Traps fine sediments	Impedes fish transport  May result in potential habitat loss  Could be cost prohibitive  May not reduce flood impacts  Impacts endangered species  May preclude fine sediment transport  Could have high maintenance costs	Regional Water Quality Control Board  Multiple County of Orange Departments  US Army Corps of Engineers  US Fish and Wildlife Service  California Department of Fish and Game	Upper and lower ranch areas, and beach cities	Sediment Transport  Pollutant Control  Vegetation Management  Fish Transit  Fine Sediment  Wise Water Use
<b>12. State-of-the-Art Sewer System Design</b> (Includes use of new pipeline technology, emergency response plan, preventative maintenance and source control)	Reduces maintenance costs  Prevents beach closures	N/A	County of Orange Health and Sanitation  Wastewater agencies  Regional Water Quality Control Board	N/A	Pollutant Control  Sewer Impacts

Potential Solutions	Potential Advantages	Potential Disadvantages	Potential Major Agency Involvement	Potential Applications	Urban Runoff Issue(s) Addressed
<b>13. Best Available Irrigation Design and Technology</b>	Improves water conservation  Affords decreased water treatment costs downstream	May be more costly to design and install for individual homeowners.	Local water districts  Multiple County of Orange Departments	All developed areas on the Ranch property	Pollutant Control  Vegetation Management  Sewer Impacts  Wise Water Use
<b>14. “Green Golf” Courses and Playing Fields Design</b>	Can use reclaimed water  Can be a component of water quality management  Provides potential for groundwater recharge  Can provide natural habitats	Requires extensive maintenance	Regional Water Quality Control Board  Multiple County of Orange Departments  Local water districts	All developed areas on the Ranch property	Sediment Transport  Pollutant Control  Vegetation Management  Fish Transit  Fine Sediment  Wise Water Use  Flood Control

Potential Solutions	Potential Advantages	Potential Disadvantages	Potential Major Agency Involvement	Potential Applications	Urban Runoff Issue(s) Addressed
<b>15. Cisterns</b>	<p>Increases water conservation</p> <p>Works for low density housing and commercial development</p> <p>Provides water cost savings</p> <p>May enhance first flush opportunities</p>	<p>May be costly to design and maintain</p>	<p>Regional Water Quality Control Board</p> <p>Multiple County of Orange Departments</p> <p>Local water districts</p>	<p>All developed areas on the Ranch property</p>	<p>Pollutant Control</p> <p>Wise Water Use</p> <p>Flood Control</p>
<b>16. Structural Storage</b> (Includes: cisterns, retention basins, and storage tanks under parking lots)	<p>Improves efficiency</p> <p>Can be used for multiple facilities</p> <p>May impact water conservation</p> <p>Provides aesthetic opportunities</p> <p>Allows for water conservation</p>	<p>Has safety issues</p> <p>May impact water rights</p> <p>Possibly constrain vector control issues</p>	<p>Regional Water Quality Control Board</p> <p>Multiple County of Orange Departments</p> <p>Local water districts</p>	<p>All developed areas on the Ranch property</p>	<p>Sediment Transport</p> <p>Pollutant Control</p> <p>Vegetation Management</p> <p>Fine Sediment</p> <p>Wise Water Use</p> <p>Flood Control</p>

Potential Solutions	Potential Advantages	Potential Disadvantages	Potential Major Agency Involvement	Potential Applications	Urban Runoff Issue(s) Addressed
<b>17. Remote Irrigation Control</b>	<p>Results in 60% reduction of runoff</p> <p>Eliminates human error</p> <p>Reduces water importation</p> <p>Savings on treatment costs downstream</p> <p>Conserves water</p> <p>Lowers water usage</p>	<p>May have higher initial cost</p> <p>Requires human intervention</p> <p>Requires education and enforcement program</p>	<p>Multiple County of Orange Departments</p> <p>Local water districts</p>	All developed areas on the Ranch property including common areas	<p>Pollutant Control</p> <p>Vegetation Management</p> <p>Sewer Impacts</p> <p>Wise Water Use</p>
<b>18. Infiltration</b>	<p>Recharges groundwater</p> <p>Reduces downstream pollution</p> <p>Provides savings on treatment costs downstream</p> <p>Conserves water</p>	<p>Requires land areas</p> <p>May produce slope failures</p> <p>Requires higher maintenance</p>	<p>US Army Corps of Engineers</p> <p>Local water districts</p> <p>Regional Water Quality Control Board</p> <p>Multiple County of Orange Departments</p>	All developed areas	<p>Sediment Transport</p> <p>Pollutant Control</p> <p>Vegetation Management</p> <p>Fine Sediment</p> <p>Wise Water Use</p> <p>Flood Control</p>

Potential Solutions	Potential Advantages	Potential Disadvantages	Potential Major Agency Involvement	Potential Applications	Urban Runoff Issue(s) Addressed
<b>19. Natural Systems for Flood Conveyance</b>	<p>Maintains habitat</p> <p>Recharges groundwater</p> <p>Improves sediment transfer</p>	<p>Requires maintenance agreement with “safe harbor” provision</p> <p>Requires close coordination with all agencies</p>	<p>US Army Corps of Engineers</p> <p>Regional Water Quality Control Board</p> <p>California Department of Fish and Game</p> <p>US Fish and Wildlife Service</p> <p>Multiple County of Orange Departments</p> <p>Downstream cities</p>	All developed areas	<p>Sediment Transport</p> <p>Pollutant Control</p> <p>Vegetation Management</p> <p>Fish Transit</p> <p>Fine Sediment</p> <p>Wise Water Use</p> <p>Flood Control</p>
<b>20. Constructed Wetlands</b>	<p>Provides habitat preservation opportunities</p> <p>Reduces pollutant runoff</p> <p>Enhances water quality</p>	<p>Requires regular maintenance</p> <p>May disrupt sediment transfer</p> <p>Requires maintenance agreement with “safe harbor” provision</p>	<p>Regional Water Quality Control Board</p> <p>US Army Corps of Engineers</p> <p>Multiple County of Orange Departments</p> <p>California Department of Fish and Game</p> <p>US Fish and Wildlife Service</p>	All developed areas	<p>Sediment Transport</p> <p>Pollutant Control</p> <p>Vegetation Management</p> <p>Fine Sediment</p> <p>Sewer Impacts</p> <p>Wise Water Use</p> <p>Flood Control</p>